Notebook, N-11-06-01

47930
Acme Co.,
MFG. STATIONERS,
69 FULTON STREET,
NEW YORK.

029.4

A. N. PETIT. W. ORANGE, N.J.
Ent'd P.M.
JUN 1 1911

Have found and Shown to Mr Edison that the trouble of Blistered Records was due to the wax Cores having some particles of Shellac Dope which Expand after the Records are pressed. The Shellac Dope finds its way there when the Old Rekords are Reclaimed

A. N. PETIT. W. ORANGE, N.J.
Ent'd P.M.
JUN 2 1911

Have received 75 new wax Cores that are free from Shellac Dope

Dressed the surface to make them all same dimention by Coating them with Montane Comp.

Then Coated them with "Jones" Dope #E Fluid enough at 290°F. does not Bubble. lays well to form the Coating. must be ground finer so it may melt quicker. Coating of one

W. ORANGE N.J.
Ent'd P.M.
JUN 2 1911

—record can be done in 20 seconds. Burnishing is not required – in fact the unpolished Blank makes a cleaner and just as smooth Record.
No Air for cooling this Dope is required, probably with an automatic coating machine air cooling will be necessary to accelerate the opperation! but the Dope will have to be Powdered finer to supply the demand of melted dope.

W. ORANGE N.J.
Ent'd P.M.
JUN 3 1911

Pressed 50 Records 3 of the lot developed blisters of large dimention nothing like the old kind the reason for them is not yet known. 9 of the lot were perfect. the balance were slightly imperfect in the way of spots of wax and small digs caused by fibre from the cleaning rag. 13 of them were imperfect in the wax core—

W. ORANGE N.J.
Ent'd P.M.
JUN 5 1911

Pressed 25 more Records 5 of the lot developed large Blisters same as above Exp. Have found the cause of this to be the Cooling to quick after pressure is turned on. all the lot was defective in the way of Specks or Dirt spots, smears! —

A. N. PETIT W. ORANGE, N.J.
Ent'd P.M.
JUN 7 1911

Pressed 4 records as follows – Shaped the blanks to measure 2.150" in Centre and 2.125" at each End. rendered plastic by Heating 2 hrs. and applied 100 lb pressure for 1 minute and 800 lbs for another minute. then applied the cooling Jacket for another minute then let off the pressure for another minute. the Result is that the Record is perfectly pressed and contracted out of its matrix. This way means the saving of lots of time because when a greater pressure is applied the Record requires much longer time to contract out. Furthermore the low pressure at the beginning prevents the cracking at each End of the matrix thus allowing the air to escape with more ease.

A. N. PETIT W. ORANGE, N.J.
Ent'd P.M.
JUN 13 1911

Made Record Sample marked 6/13/11 as follows

Coated montane cylinder with alcoholic Solution of Shellac – Evaporate as much alcohol as possible in heated oven 150° F. for 3 hrs. + pressed Record. The Result is a beautiful Surface – smooth and quite free from Crackles But too soft to be commercial. Heated another in oven for 12 hrs. + moulded marked 6/14/11 Film of Shellac is harder, looks more practical. possibly longer heating will further improve, try again. Mr Edison Suggested some new methods of producing Records, the above is one form. Told Mr Jones of Mr Edison Suggestions and he immediately Coated Montane Blanks and I pressed them.

Ent'd P.M.
JUN 14 1911

Made 6 Records as follows. Coated with Coating Machine and with #365A Dope mostane — — Blanks a very thin layer — about 6 thousandth, then flamed them to puncture any air that was imprisoned between the Blank surface & the film, after this applied the full thickness of #365A Coating. and pressed them in the usual way.

The Blanks used for the above six were undressed, and straight Only one blister showed from the lot of undressed blanks and no blisters showed from another lot of 6 Dressed blanks with serious test again

Ent'd P.M.
JUN 17 1911

Made 75" Records with "F" Dope works good. Some trouble in preventing smear on Blank surfaces. the Moulding is O.K.
Expert inspection of this lot shows only 1 Record that is O.K. all others have tiny defects.

Ent'd P.M.
JUN 24 1911

Blanks Dressed to 2.123" in Centre, when Coated is 2.155" " "

Made 12 Records with Jones" F. Dope, works Good. the main fault is a smear of soft gray matter produced when the melting pot gate is closed and the lip of the gate rubs upon the Surface of the Blank. Records look good and are hard Enough

Ent'd P.M.
JUN 26 1911

Made 12 Records with Jones" G. Dope works good — more Sterate of Zinc was added to the F. Dope which produced this G. Dope — Still get some smear when the Blank is burnished, and the Sterate of Zinc produces a softer mass. too soft to be usefull

A.N. PETIT, W. ORANGE, N.J.
Ent'd P.M.
JUN 27 1911

Made 12 Records with H. Dope this carries less Stearate of Zinc than the G. Dope and more than the F. Works good & when Burnished and wiped off with muslin produces a good Record.

Made 12 more without burnish Could not detect any Difference of Surface noise and are less liable to smears.

A.N. PETIT, W. ORANGE, N.J.
Ent'd P.M.
JUN 28 1911

Made with "Jones" G Dope
Record Sample
$\frac{6/28/11}{2}$ put into card-board box and box placed in heated oven temp 120° F. to 126°
after 6 hrs. Records were distroyed some. the surface had become plastic enough to cause some pin-holes and other irregularities

A.N. PETIT, W. ORANGE, N.J.
Ent'd P.M.
JUN 30 1911

Made another lot of Records with Jones' H Dope. now have definitely found that this H. Dope does Condense much too soon to be practical for manufacture of Records.
20 Records is the Maximum number that can be coated before it becomes so viscous and rubbery that smooth coating is no longer possible
from the time of Starting the melting of a batch when temp. is 280° F. and not allow temp to Rise above 300°. the Dope is condensed to a mass like putty in 1 hr.
And when temp is 246° at start and not allowed to go above 262° in one hour coating could be done only with difficulty indicating that a higher temp was necessary to make liquid enough and higher temp. Condenses it too soon.

M. G.

W. ORANGE, N.J. A.N. PETIT
Ent'd P.M.
JUN 30 1911

"Jones" #3 Dope

Started to melt at 4.25 with pot temp. at 260°.
at 4.35 temp. was up to 266°
at 4.48 Started to coat blanks at 270°
with a spoon large enough to carry Just as much Dope Powder as required to coat one record that quantity was added after coating each blanks and temp. was held between 265 to 275 (works good at 270.) 34 Records Blanks were coated in a Satisfactory manner, using air Cooling. Did look as if the opperation could have continued indefinitty.

O. K. Try again on larger Scale

These Blanks will be numbered
6/30/11
2

W. ORANGE, N.J. A.N. PETIT
Ent'd P.M.
JUN 30 1911

34 Blanks # 6/30/11 (2) were placed in oven heated to 140° F. at 6.00 P. M. with object to force evaporktion and setting of the Dope by long heating before moulding the Record Blanks # 6/30/11
3

W. ORANGE, N.J. A.N. PETIT
Ent'd P.M.
JUL 1 1911

at 7.45 A. M. placed 14 of the above blanks at little higher temp up to 168° in order to render plastic enough to mould
at 1 P. M. Started to mould
The unburnished Blanks after such long heating become glossy,

"Jones" #3 Dope consists of
T. N. Shellac 22 oz
Crude Tetra chlor. Nap. 10 oz
Stearate of Zinc 10 grams
Violet 5 grams

Heat Test

A. N. PETIT
W. ORANGE, N.J.
Ent'd P.M.
JUL 1 1911

One Record #7. Dope & one " #H. Dope was subjected to temp of 112° to 114° F. for 48 hrs. The Dope became soft enough to take impression by contact simply. But the Record stands up — does loose a small percentage of tone - Volume —

A. N. PETIT
W. ORANGE, N.J.
Ent'd P.M.
JUL 3 1911

Made some changes with the Expander device with object to mould the mandrel Core at both Ends so close that only very little reaming will suffice to to make the Record fit the mandril of the Phono- and it does the trick all right—

A. N. PETIT
W. ORANGE, N.J.
Ent'd P.M.
JUL 5 1911

Made some experiments with "Jones" #3 Dope to render it more fluid when it is in condition for coating Blanks, Pyrocatechin in very small quantity works admirably well — rendering the Dope more fluid and seems to all go off in the oven when heating the blank for 12. to 18 hrs. and leaves the Dope good and hard — But the price of Pyrocatechin is so high that it would be in the way of making use of it in practice — Have tried Benzoic acid in proportion of 5% to #3 Dope — which makes it liquid enough "Jones" suggested Camphor — in fact several things things would produce the Effect. What is required is a salt that melts at about 150° to 200° and of such nature that it will go off from the Dope when it is [illegible] oven heated to 130° to 160° for 12 to 18 hrs —

A. N. PETIT, W. ORANGE, N. J.
Ent'd P.M.
JUL 5 1911

Coated Six Blanks with Jones" #3 Dope & acid Benzoic in proportion of
#3 Dope 10 5/16 oz &
Acid Benzoic 5/16 oz mix the Powders together and melt in Coating machine was fluid enough at 260°

Will number these Blanks 7/5/11, Put in oven at 4.30 when temp. was 140°

A. N. PETIT, W. ORANGE, N. J.
Ent'd P.M.
JUL 6 1911

#7/6/11

Pressed the Six above Blanks into Records after standing in oven 18 hrs. with temp running from 140° to 160°. this morning with temp at 160° the blanks showed that the coating had become little too soft the Dope displaced itself. 160° for the last hour only may be allright but not for a long period. The Records pressed out allright. requiring the pressure to be put on gradually up to 1500 for 1 1/4 minute then apply the cooling Jacket for 3/4 minute when the pressure may be turned off and Record extracted.

The Dope shows to be little too soft although it stands well at high temperature probably 1/4 oz of Benzoic Acid to 12 oz of #3 Dope would be better

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Experiments to Render the Dope more fluid for Coating

1 Jones #3 Dope 10 parts
Phenol Trichloride 1 "
Sample #1
Heat 270° Fluid

"Jones" #3 Dope 20 parts
Phenol trichloride 1
Sample #2
Heat

W. ORANGE, N.J.
Ent'd P.M.
JUL 6 1910

Put Sample #1 in oven
at 3.15 P.m. Heat temp. 140°
" 5.10 " " " 142
Next morning at 8.00 a.m. 148°
After 32 hrs. Heating. Granular Structure.
Little Soft

Sample #2 in oven
at 3.45 P.m. Heat temp 140°
" 5.10 " " " 142°
Next morning at 8.00 a.m. " " 148

Dope Samples

22/32	T.N. Lac (unboiled)
10/32	Tetra Chlor-Nap. (unrecrystalyzed)
1/128	Violet
1/32	Trichloride Phenol

Melt Tetra add Shellac (Pulverized) and Violetcolor mixed - keep temp below 270 and finally no higher then 274 add the Phenol stir well & pour off

Will Number Sample #3

A. N. PETIT. W. ORANGE, N.J.
Ent'd P.M
JUL 6 1911

Dope Samples #4

T.N. Shellac	20 Part	10/16 oz
Violet Color	1/128 "	1/128 oz
Trichlor-Phenol	2 "	2/16 oz

Heat 270° very short moment at 276° at finish
Makes good looking mass Hard
& Tough - try more Phenol
Noticeable that the mass is free from
Smear, Some Dye Crystals shows up
in mass undesolved

after 23 heating in oven has faint smell of Phenol - Harder then #5

Sample #5

T.N. Shellac	10 Parts
Violet	1/128 "
Trichlor Phenol	2 "
Napthalene	1/4 "

Heat same as above -
Sample is more pliable & soft then
above #4
There is absence of free crystals of Dye.

After 22 hrs. heating in oven has faint
smell of Phenol — Hard & Tough
little Plastic — Celluloid-like

A. N. PETIT. W. ORANGE, N.J.
Ent'd
JUL 7

Sample #6

T.N. Shellac	10 parts
Violet	1/128 "
Tri-chlor Phenol	3 "

Dissolve the Color in Phenol first
Heat to 266° - becomes liquid enough
free from Smears
lots of Pin Holes
little soft & Rubbery about
Same as #5 | After 22 hrs Heating
Tough & Harder than # 4 - Free from Smear - Some pin holes

Sample #7

T.N.-Shellac	10 Parts
Tetrachlor-Nap.	2 "
Trichlor Phenol	1
Violet	1/128

Heat to 264° liquid enough
Fewer Pin holes then #6
Harder then #6
Sets quicker
Some traces of Smears

after 22 hrs heating has little odor of Phenol -
is tough - not free from Smears
Some Pin holes - Looks fair

W. ORANGE, N.J.
A.M. P.M.
JUL 7 1911

Sample # 8

I-N-Shellac	10 Parts
Tetra-chlor-Nap-	2 "
Napthalene	1 "
S. Purple dye	1/128 "

Liquid enough only when at 180°

Melt first the Tetra-chlor-Nap with the Plain Napthalene & the Color, a thick mass adheres to the sides which dont desolve.

Some Smears & Pin Holes Pretty Tough mass

after 14 hrs heating Smears & Pin holes are still there. Granular Structure – Hard & Tough

Sample # 9

I-N-Shellac	10 parts
Tetra-Chlor-Nap-	3 "
Monobromated Camphor	1/2 "
Color Purple	1/128

Some Smears & Pin Holes

The Color adheres to the Sides when first melted with the Tetra – dont desolve

does not look Very promising

after 14 hrs. Heating

Hard & Tough after 14 hrs heating

Some Smears

Sample #10

I. N. Shellac	10 Parts
Tetra chlor-Nap-	2 "
Napthalene	1 "
Blue Dye	1/128 "

This Sample is to test difference between Purple & Blue Color

The Blue desolves instantly and acts upon the mass to render it more fluid at 160° then the Purple at 180°. There is too much Color.

Sample shows less Smear & Pin holes then #8

after Heating 14 hrs

Granular Structure. fine layed smear

Sample # 11

I. N. Shellac	10 parts
Tetra chlor-Nap-	3
Camphor	1
Blue Color	1/128

Mixes Good – liquid at 275°

Some Smears but finely distributed

Nearly free from Pin Holes

Pretty Hard & Tough as soon as cold

Smears & Pin Holes are about the Same as in #10

Mass is Very tough – But little too plastic

#10 is more plastic then #11 or 12

A. N. PETIT W. ORANGE, N. J.
Ent'd P.M.
JUL 7 1911

Sample #12

T. N. Shellac	10 parts
Tetra chlor Nap	4 "
Trichloride Phenol	1/2 "
Camphor	1/2 "

Melts good. Very liquid at 270°
Sets quick enough
Smears & Pin Holes about the same as in #10 — 11
Toughness about same as #11
Would Coat good

Sample #13

T. N. Shellac	10 Parts
Tetra-chlor-Nap	3 "
Napthaline	1/2 "
Camphor	1/2 "

Melts & mixes good
temp 270 the highest
Some Smear & Pin Holes
Sets quick enough pretty Hard & tough

After 48 hrs. in Oven to Evaporate Solvent temp 148 to 158° — too Soft —

After 84 hrs. a Shade Harder

Plastic at 96°

A. N. PETIT W. ORANGE, N. J.
Ent'd P.M.
JUL 8 1911

Sample #14

T. N. Shellac	10 Parts
Trichlor Phenol	3 "
Victoria Blue	1/128 "

Melt Phenol with Color and Pulverized Shellac gradually. temp no higher than 164°. fluid enough to filter at 160°
Samples are not free from Pin holes.
Mass is fairly Hard as soon as Cool —
Too much Color
after 48 hrs. in oven at 148 to 158° to Evaporate Solvent — too Plastic
after 84 hrs. a Shade Harder

Sample #15 — Very Plastic at 96°

T. N. Shellac	10 Parts
Trichlor Phenol	4 "
Victoria Blue	1/128 "

Opperation Same as above #14
As soon as Cool it is not so hard as #14 But much freer from Pin holes.
A Sample of this dope 24 hrs after made and exposed to 96° Temp is very Plastic Enough to mould Record. the addition of Paraformaldehyde hardens it some. see #16 After 48 hrs. in Oven temp 148 to 158°. too plastic — But Patent Leather finish

W. ORANGE, N.J. A.M.
Ent'd P.M.
JUL 8 1911

Plastic at 96°

Sample #16

T. N. Shellac		10 Parts
Trichlor-Phenol		3 "
Paraformaldehyde		1 "
Blue Color	—	1/128

Melt Phenol with aldehyde Ebulition takes place, and seems that a crystal is formed that does not melt—

Add the Shellac with the Blue Color gradually at 140° it begins to Bubble and Heat is generated; care has to be taken so the temp will not Rise above 180°, is pretty thick at that temp. cool down to 160° the Bubbles flatten down. When cold the mass is quite hard and some flexible of plastic quality—harder then #15

A Sample of the above ~~dope~~ 24 hrs. after made and Exposed to 96° Heat is plastic enough to mould Record But the Paraformaldehyde has the Effect of rendering the compound harder then #15—See

After 48 hrs in oven a Shade Harder then #15
after 84 hrs

W. ORANGE, N.J. A.M.
Ent'd P.M.
JUL 8

Very Plastic at 96°

Sample # 17

T. N. Shellac		10 Parts.
Trichloride Phenol		4 "
Paraformaldehyde		1/2 "
Victoria Blue	—	1/128

Melt Phenol with formaldehyde—some crystals show undesolved or new ones are formed which does not desolve at that temp add the Victoria Blue Filter off—there is only a very small proportion that remains in the filter perhaps 1/4 of 1%—

Now there is 3 1/2 parts of this mixture Melt this and add Shellac 10 parts becomes very fluid at 125° and could be filtered at that temp provided it is done Just as soon as the Shellac is thoroughly disolved. I noticed that as the temp. Rises from 125° the mass thickens and very little heat is required to Rise the temp in fact it rises being off the flame for a time. Temp of this Sample did not Rise above 140°

The mass as soon as cold is more plastic then #14 & 16 and a shade less then #15

W. ORANGE, N.J.
Ent'd P.M.
JUL 10 1911

Solvent mixture

In flask —

Trichlor-Phenol	1 oz
Paraformaldehyde	1/4 oz

#1 looses 1/4 oz by Evaporation

Trichlor-Phenol	1 oz
Paraformaldehyde	3/8 oz "

looses 3/8 oz by Evaporation.

#2

Shows few clear spots in Result.

Trichlor-Phenol	1 oz
Paraformaldehyde	7/16 oz

looses 7/16 oz by Evaporation

Shows less Clear Crystals

#3

Trichlor Phenol	1 oz
Paraformaldehyde	5/16

Shows some clear Spots less than #2 But more than #3

#4

Trichlor-Phenol	1 oz
Paraformaldehyde	3/8 oz
Rosolic acid	1/16 "

~~#5~~

no clear Spots - a Liquid Exudes from the Salt after it has set.
Does not look good

ENTD P.M.
JUL 10 1911

Sample #18

T. N. Shellac	10 Parts
#2 Solvent Mixture	3

Temp. no higher then 152°. could filter.
Does not Set hard as soon as cool
Very Rubbery Plastic after 48 hrs. in open.
little harder after 36 hrs in Oven 154°

#19

T. N. Shellac	10 Parts
#2 Solvent Mixture	6

Very Liquid at 140° could filter no higher then 152°
~~Does~~ not Set Hard as quickly as #18 — Will not harden after 48 hrs. in Open Softer than #18

#20

T. N. Shellac	10
Tetra Chlor. Nap.	3
#2 Solvent Mixture	1

Tetra & Solvent mixes good
Liquid enough to filter at 260°
little too plastic after 36 hrs. in Oven 154°
try again with less tetra---

ENTD P.M.
JUL 10 1911

#21

T. N. Shellac	10
Tetra Chlor. Nap.	4
#2 Solvent Mixture	½

Liquid enough to filter at 250° to 260° Little Smears. Fairly Hard & Tough. Very few Pin Holes
Looks Good
After 36 hrs in Oven 154° not So plastic as #20
Try again

#22

Same as above #21 with addition of — 1/128 of Victoria Blue — Melt the Tetra & the #2 Solvent & the Color together let Ebulition settle down then add Shellac.
~~Dope~~ when Cold is Colored Green — Some Smears & few Pin holes Believe the Smears begin to show up when the temp is Raised above 250°. this was up to 166°

W. ORANGE N.J. A.N.
Ent'd P.M.
JUL 10 1911

Sample # 23

T. N. Shellac	10
Tetrachlor-Nap-	4

Solvent Mixtures

Tetra-chlor-Nap-	10 Part
Benzoic Acid	1/2 "
Zinc acetate	1 "

Heat up to 425° about 1/2 hr.

#5

Tetra chlor-Nap	10
Zinc acetate	1
Pyrogalic acid	1/4

Temp. 275°

Pyrogalic acid clears the mixture and ~~Darkens~~ it -
Would not all Dissolve add

Rosolic acid	1/4

Would not all Dissolve
filter. quite some muck over - #6

W. ORANGE N.J. A.N.
Ent'd P.M.
JUL 11 1911

Sample 24

T. N-Shellac	10 Parts
Tetra-chlor-Nap-	3 "
Phenol. tri bromatice	1/2 "
Blue Color —	1/128

Temp 282°
fluid enough to filter at 270°
Hardens quick

W. ORANGE, N.J. A.N. PETIT
Ent'd P.M.
JUL 11 1911

Solvent Mixtures

Tetra-Chlor-Nap	10
Benzoic acid	½
Antimony Sulphide	

M.G.

Tetra-Chlor-Nap	10
Zinc Acetate	1
Benzamide	1

#7

Tetra Chlor-Nap	10
Zinc Acetate	1
Perchlor Benzol	1

#8

Tetra chlor-Nap	10
Zinc Acetate	1
Benzamide	½

Not Clear Solution filter
#9

Solvent Mixtures

Tetra-Chlor-Nap	10
Paraamidophenol	½
Zinc Acetate	1

A Residue that wont dissolve
#10 M.G.

Tetra-Chlor-Nap	10
Trichlor Phenol	1
Paraamidophenol	½

M.G.

Sample #25

#5 Solvent Mixture	4
Shellac	10

Little Blue Color

W. ORANGE, N.J. A.N. PETIT
Ent'd P.M.
JUL 11 1911

Phthalic Acid 1 Part
T.N. Shellac 1 3/16 to 1 1/4"
are the best proportions
Producing a mass that crystalizes
in about ½ hr. when button 1/8 inch thick
is poured and is fairly tough & dry—

11th

#1

Tetra-chl-Nap	8 parts
Phenol-Resin	4 "

Temp. 325°

#2

Tetra-C-N-	8 parts
Phenol-R	8 "

Temp. 350°

#3

Tetra -Chl- Nap-	8 parts
Phenol-R -	12 "

Temp - 350°

#4

Tetra chlo Nap	8
Phenol-R -	16

Temp - 350°

#5

Tetra - chlo- Nap-	8
Phenol-R.	20

Temp 350°

#6

Tetra chlor-Nap	8
Phenol-R.	24

Temp - 270

11th

#7

Tetra chlor Nap-	8 parts
Phenol-R -	24 "
Benzoic acid	1 "

temp 280°

#8

Tetra-chlor-nap-	8 parts
Phenol-R -	24 "
Benzoic acid	2 "

temp 160°

#9

Tetra chlor-Nap-	8 parts
Phenol-R -	24 "
Benzoic acid	4 "

temp 250°

#13

#6	1 Part
Camphor	1/4 "
Shellac	1/2 "

#14

#5	1 Part
Camphor	1/4 "

#15

#5	1 Part
Camphor	1/2

#16

#5 —— 1 Part
Resorsine 1/4 "
Clear, Beautiful, Pink-cream - little soft

#17

#4 —— 1 1/4 Part
Resorsine 1/4
Brittle - little sticky

#18

#4 —— 1 1/4
Shellac 1 "

#19

Tetra 8 parts
Phenol-R - 12 "

12th Sample #20
#4 —— 8 parts
Sample #16 —— 6 "
Hard - But too Brittle

#20x

Oleamide 1 Part
#5 —— 3 "
Clear Mass - Brittle

12th #20xx
Tetra-chlor-Naps 1 Part
Oleamide 1 "
add annother 1 "
the addition of Oleamide
reduces the mass to a soft
sticky mass

#24

#19 —— 8 Parts
Anchusin-alkanin 1/4 "
Mealy - No Tenacity

#26

Tetra-chlor-Naps - 1 Part
Reclaimed Rubber 1 "
Shell - 1 "

#27

Tetra-chlor-Naps 1 Part
R. R. Rex 1 "
Zinc acetic 1/64 "
Shell - 1 "

12th #28

Tetra chlor. Naps.	1 Part
R.R. Rex	1 "
Shellac	1½

temp 290°

Hard But brittle

add more Shell - less brittle

" " " temp 325°

Very little Smear - not enough tenacity. little soft

#29

Tetra-chlor-Nap-	1 Part
Phenol-R-	1 "
Shell -	4 "

fluid enough at 325°

Hard - Brittle

add 1/128 part of aniline Black

12th #30

Tetra-chlor-Naps	1 Part
Phenol-R	1 "
Shell	5 "

temp 325°

Brittle - No tenacity

add Fat aniline Black

less Brittle

#31

Tetra-chlor-Naps-	1 Part
Phenol-R	1 "
Shell	6 "

liquid enough - no Smear

very few Pin-holes

add Fat aniline Black

less brittle

12th #32

Tetra-chlor-Nap	8 parts
Phenol-R	16 "
Castor oil-acid	1 "

little Sticky

#33

Tetra-chlor-Nap	8 parts
Phenol-R	16 "
Castor oil acid	4 "

vary liquid
more sticky

#34

Tetra-chlor-Nap	8 parts
Phenol-R	16 "
Phthalic acid	2

Brittle - little sticky

13th #34

#20xx	1 Part
Shell	3 "

#35

Shellac	10
Phenol R	4
Tetra-chlor-Phenol	4
Victoria Blue	1/32

temp 325°
fluid enough, few waxy spots
Run temp to 380°
Does not condense
vary fluid

#36

Shellac	6 Parts
Tetra-chlor-Nap	1 "
Phenol-R	1 "
Fat aniline	1/32

temp 325°

13th # 37

Shellac	20 Parts
Tetra chlor-naps	6 "
Phenol-R.	1 "
Purple color	1/16 "
Phthalic acid	1/8 "

Temp. 300°

less Smear
" Pin Holes
" Brittle then # 37

39

Shell-	21 Parts
Tetra-chlor-naps	7
Phenol-R	1
Phthalic acid	1/2
Purple Color	1/16

temp 300° to 320°

more Smear & Pin holes when higher heating

13th # 41

Tetrachlor-naps	1 Part
Phenol-R	1 "
Shell-	4 "
Phthalic acid	1/16 "
Victoria Blue	1/32 "

310° Heat

Very little Smear
few Pin holes

42

Tetra-chlor-nap	1 Parts
Mono-chlor-Toluol	1/4 "
Phenol-R	1 "
Victoria Blue	1/32 "
Shell-	4

temp 300°

add more Toluol makes Extra liquid
Resulting mass is soft

13th

#43

Tetra-chlor-naps	1 Part
Phenol-R.	3/4 "
Mono-chlor-Toluol	1/2 "
Violet Color	1/128 "
Shellac	5

Not So Brittle as #42
Fewer Smears
Few Bubbles

#44

	Parts
Tetra-Chlor-Naps	1 1/4
Phenol-R	3/8 "
Nitro-Toluol	1/4 "
Victoria Blue	1/64 "
Shell	5

Extra fluid at 300°
Can Stand for more Shell
Very Hard & Tough
more horny than #45

13th

#45

Tetra chlor-nap	1 Part
Phenol-R	3/8 "
Nitro Toluol	1/8 "
Victoria Blue	1/64
Shell	6 "

temps up to 340°
thin enough to filter
Harder than #44

#46

Tetra-chlor-Naps	1
Phenol R	3/4
Nitro Toluene	1/8
Victoria Blue	1/128
Shellac	5

More Brittle than #45
no Smears no Pin Holes

13th

#47

Tetra chlor-Nap.	1 Parts
Phenol-R	3/4 "
Nitro Toluene	1/8 "
Shell	5

Melt Tetra - Phenol - & Toluene when temp is 300° add Shell ~~little~~ by ~~little~~ raise temp to 320° this allows the mixture to keep fluid ^ as soon as the last Shell has been added Raise temp to 340° fluid enough to filter

Very Hard - clear - tough almost free from smears & Pin-Holes & Blisters looks O.K

at 114° heat it softens enough to make impression.

#48

Tetra chlor-Nap	1 Part
Phenol. R	3/4 "
Nitraniline	1/8 "
Shellac	5 "

#49

Tetra-chlor-Nap.	1 Part
Phenol-R	3/4 "
Benz Phenol	1/8 "
Shell	4 1/2 "

#50

Tetra-Chlor-Nap-	1 Part
Phenol-R.	3/4 "
Dinitrophenol	1/8 "
Shell	5

Not liquid enough at 325°

#51

Tetra-chlor-Nap.	1 Part
Phenol-R.	3/4 "
Phthalic acid	1/8 "
Victoria Blue	1/32 "
Shellac	1/2 "

temp 300°

Some Bubbles

#52

Tetra chlor-Nap.	1 Part
Phenol R.	1 "
mono-chlor-Toluene	1/2 "
Victoria Blue	1/32 "
Shellac	1/2 "

#53

Tetra chlor-Nap.	1 Part
Phenol-R	3/4 "
mono-chlor-Toluene	1/2
Victoria Blue	1/64 "
Shellac	1/4

Temp 300 to 320°

Very Hard - quite tough

not much Smears

Some Blow Holes

#54

Tetra chlor-Nap.	1 Part
Phenol-Resin	1 "
mono-chlor-Toluol	1 "
Victoria Blue	1/64
melt & add Shellac	5 "

14th #55

Amyl acetate	½ Part
Phenol R.	1 "
Mono-chlor Toluol	1 "
Shellac	5 —

Much too Soft

#56

Repeated #44 with the addition of little Victoria Blue was very fluid at 318° quite free from Bubbles

---

14th #57

Mono-chlor Toluol	1 Part
Phenol-R.	1 "
Amyl acetate	¼ "
Shellac	4

Very Good Sample try this on Cylinder is little Plastic but May evaporate amyl-acetate by baking the blanks

14th #58

Mono-chlor-Toluol	1 Part
Tetra-chlor-Nap	1/4 "
Phenol-R	1 1/4 "
Amyl acetate	1/4 "
Shell -	4 1/2

Shows up Smears — no doubt due to the addition of the Tetra-Nap

---

#59

Monochlor Toluol	1
Phenol R.	1
Shell	2

pretty fair Mass little Smears add Nitro-Benzole and it immediately very fluid and elliminates the Smears But makes mass Plastic Addition of more Shellac makes more brilliant & compact

---

14th #60

Phenol R	1 Parts
Mono-chlor Toluol	1/4 "
Nitro Benzole	1/16 "
Shell	2 "

Very Hard & Clear — But too Brittle addition of more Benzol makes too soft 120° temp.

#61

Phenol R	1
Mono-chlor Toluol	1/2
Nitro Benzole	1/2
Shell —	3

Too Soft

#62

Phenol R.	1 Part
Mono-chlor-Toluol	1/4 "
Nitro Benzole	1/2 "
Shell —	3

Temp. 280° Very liquid
Some Bubbles

#63

Phenol R.	3/4
Mono-chlor-Toluol	1/4
Nitro Benzol	1/8 "
Shell	2

Temp 300 -

#64

Phenol R.	1 Part
Mono-chlor-Toluol	1/2
Nitro Benzol	1/8 "
Shell	2

Victoria Blue
liquid at 300°

#65

Phenol R	1 Part
Mono-chlor Toluol	1/2 "
Nitro Benzol	3/16
Shell	2

Melt to Boiling - add Shell
in very small quantities
temp 320° Very liquid

Does not soften at 120°

try another with
more Benzo—

W. ORANGE, N.J. A.N.
Ent'd P.M.
JUL 17 1911

#66

Phenol-Resin	1 Part
mono-chlor-Toluol	1/2 "
Dinitrobenzol	1/4 "
Shellac	2

Melt the first 3. boil about 3 minutes add Shellac gradually. Temp - 300°. Some Bubbles - liquid enough

Result. Very little Smear. Some holes. Hard - but brittle

67

Phenol-Resin	1 Part
mono-chlor-Toluol	1/2 "
Dinitrobenzol	1/2 "
Shellac	2 "

Mix Same as above

Result - Too plastic - No tenacity.

68

Dinitrobenzol	1
Balata	1/4
Shellac	?

Temp. 300° to 320°

Very promising mass - try again

W. ORANGE, N.J. A.N.
Ent'd P.M.
JUL 17 1911

Nitronapthalene	1 Part
Balata	1/4 "
Shellac	4 "
" annother	1 "

Looks good. Very liquid all through in all proportions of Shell-

Result a tough Hard mass the nature of which is that it can be indented with a point if pressure is applied Slowly - but will chip off if applied quickly - Seems not to have quite enough tenacity. Looks fair No Smears - No Bubbles - Very Liquid

---

70

Nitronapthalene	1 Part
Balata	1/4 "
Shellac	5 "

Same as 69 except that this is made in less time the Shellac being added as soon as it melted

Result - Same as #69

W. ORANGE, N.J.
Ent'd P.M.
JUL 17 1911

71

Nitronapthalene 1 Part
Balata 1/8 "
Shellac 1/8 "
Melt & bring to Boil –
then add Shellac 4 "
Temp. 300° Liquid enough –
few Bubbles.
Result. When set cold is plastic
enough for finger nail mark
But cuts like Horn –
is tenacious enough –
— Make Harder

72

Dinitrobenzol 1 Part
Balata 1/8 "
Dissolves – but not quite
as fine as with the
Nitronapthalene

73

Dinitrobenzol 1 Part
Balata 1/8 "
Shellac ?
add Shellac until it is liquid
enough when temp is 300 and
looks good –

W. ORANGE, N.J.
Ent'd P.M.
JUL 17 1911

73

Dinitrobenzol 1 Part
Balata 1/2
Shellac 3
Very Liquid
Result Rubbery mass –

74

Nitrochlorbenzol 1 Part
Balata 1/2 "
Shellac 3 "
Result – too Soft. Plastic –

75

Nitronapthalene 1 Part
Balata 1/2 "
Shellac 5 "
Was Very liquid when the
5 parts of Shellac was added
so added another part of Shell
the Sample was still too plastic
added more shell until 13 parts
were added and could be used to
coat then if filtered, think that
10 parts would be about as much as
possible to filter –

Cold Solution Records #1
not numbered

W. ORANGE, N.J. A.N. PETIT
Ent'd P.M.
JUL 17 1911

Pressed 7 Records for Mr Edison which were Montana Blanks coated over with alcohol-Shellac Solution. the Blanks so coated looked nice + glossy when first coated - When they had been in oven temps 114 to 120° for 1 hour they began to show pits = pin-holes and tiny blisters. pressed one Record after 3 hrs-heating

Result - the Blank coating was not flat. it did show some Rib-like depressions - due to the coating displacing itself during the course of evaporating the Solvent. these Rib-like depressions could be noticed upon the pressed Records, otherwise the Record pressed as nicely as any with Hot Dope coatings. left 6 of the Blanks in the oven all night, temp 114 to

#1

120° and then pressed them into records, which all turned out good - no blisters - no dents - no Blind-spots. no smears - no film marks

Result the records so made look very good and could be made in practice — further test required —

Cold Solution Records #1

W. ORANGE, N.J. A.N. PETIT
Ent'd P.M.
JUL 18 1911

4 more blanks were in oven at 114° to 120° for 48 hrs. and placed in oven at 140 to 150° for 14 hrs. more and this morning pressed —

Remark the Blanks were not coated smoothly — after all the seasoning the coating did not improve - there was Pin-holes + tiny Blisters all over - the coating did not lay flat,

Result - Blind spots + Pitted on all four Records - But film is tougher and adheres to Montana better. Matrices were 140° Hot, Blanks-same —

#2

Ent'd P.M.
JUL 18 1911

Received 24 Blanks
Coated with Cold Solution
Placed them in Oven
at 10.00 a.m. Temp. 90°
" 11.00 " 100°
" 12 " M. " 120°
" 1 " P.M. " 124°
Blank Coating looks Just as glossy
as when first put in oven.
at 2. P.M. Temp- 132°
Blanks begin to show some
tiny blisters
at 2.30 Pressed 4 Records
will number #2A.
at 4.00 Temp- 132°
at 5.00 " 142°
at 5.45 Pressed 4 Records
will number #2B

Ent'd P.M.
JUL 19 1911

Left Blanks in oven over night temp.
between 132° & 122°
at 10.00 A.M. temp 122° at 11.00 temp 140°
Pressed 4 Records will number #2C
at 5.30 Temp 150° Matrices temp 150°
Pressed 5 Records will No 2 D & 1 Special.
Coated with Purified Shellac will No 2 DD

See page XX three sheets over →

Ent'd P.M.
JUL 18 1911

Sample #76
Nitronapthalene 1 Parts
R. R. Rex. 1/4"
Shellac 5"
Melt the 1st two to boiling
then add Shell gradually
Temp- 290°
Melt 1st two to boiling and allow
to clear of Bubbles then add Shell
Result Too Soft at 110°

#77
Nitronapthalene 1 Parts
R. R. R 3/8"
Shellac 7"
Too Soft at 110° Temp.
Temp-up to 325°
would filter
Sample looks good try to coat Blanks

Nitronapthalene 1 Part
Remarks. Shellac - Semi Plastic & Resilient 1 "
" Same Nature little harder 1 "
" " " " " 1 "
cuts like soft Horn
" " " " 1 "
begins to with fractures
" " and Brittle 1 "
Best for Record
" " " " 1
" " " " 1 #78

W. ORANGE, N.J. A.N.T.
Ent'd P.M.
JUL 19 1911

#19

Dinitronapthalene	1 Part
Shellac	1 "
Sets quick to Hard brittle mass	
Shellac — another	1 "
Hard & a shade plastic	
Shell. another	1 "
Harder & shade Plastic	
Shell — another	1 "
Harder & a shade plastic	

As Compared with Plain Shellac it is not so hard and not so brittle as Plain Shellac — 4 Parts shellac is all that will go in the temp is 330° when it is fluid enough to filter

The Mononitronapthalene seems to be the better of the two because it dissolves more Shellac and consequently a tougher mass

One advantage with the Dinitro is that the mixture is hard and set as soon as cold

---

W. ORANGE, N.J. A.N.T.
Ent'd P.M.
JUL 19 1911

#3

Received 6 Blanks Coated with cold Solution as follows. 1st coat is with pyridine addition to the Shellac Solution, then 4 coats of plain Shellac solution in alcohol put in oven at 2.15 P.m. temp 120 — at 5.30. Temp. 130°

See page AX.3 sheets over →

Ent'd P.M.
JUL 20 1911

at 8.15. temp 138°
at 9.00 " " 142° pressed three Records — will number #3

Moulded a Record with matrix as hot as 140° and another with the Same matrix 110° hot, the latter Record showed a more glossy surface and just as perfect in every other respect therefore 115 to 120° Heat for the Matrices will be Right lower than 115 the Blank becomes chilled before the Record impression is fully moulded.

The Blanks after 48 hrs in Oven require higher temp than one for only a few hrs. 140° the lowest 160° highest

W. ORANGE, N.J.
Ent'd P.M.
JUL 19 1911

#80

Phenoltribromated	1 Part
Shellac (Gummy)	1 "
" (cuts and bands)	1 "
" (begins to Show brittleness	1 "
" (Limit of Shellac, Hard enough little plastic and brittle	1 "
Shell " Too much Bubbles & too thick. But very fine Glossy Compact mass. Very much like Plain Shellac in toughness & hardness	1 "

after Investigating the cost of Phenoltribromated find the price to be listed $5.00 for 2 1/8 lbs.

#81

Nitronapthalene	1
R. R. Rex	1/2
Shell	6

82

Nitronapthalene	1/2
Di " "	1/2
R. R. Rex	1/2
Shellac	6

83

Nitronapthalene	1
Di " "	1/2
Shellac	6

Temp. 300° liquid enough.

Result, Mass is too soft. Cuts like horn if very thin chip is cut, but cutting deep it brakes away. it will bend if pressure is applied slowly, but abruptly it will brake. Quite some blow holes. Has surface of Good quality. Celluloid-like.

Page XX

#2

W. ORANGE, N.J.
Ent'd P.M.
JUL 20 1911

at 8.15 a.m. Temp. 138°
at 10.00 " " " 152°
Pressed 5 Records — one with
Matrix about 140° Hot the other
four about 110° " the lower
Heated matrices produced
Records with a considerable more
gloss than with the hotter
matrix. the magnifying-glass
shows that the lower heated
matrices did chill the Blank
coating before a full impression
of the Record was made
therefore 110° Hot for the matrix
is not enough.
This lot of 5 Records will #2 E
21st at 8. a.m. Temp 148°
at 10.30 " 142°
Pressed two last Records of this lot
the matrices were 140°
the first Blank pressed which was 142°
cracked open, was not Plastic enough —
And the Record impression is not quite
sharpe will number #2 F
The last Blank temp 160° Matrix 140°
Record moulded perfectly Will No #2 EF

These last two have been in oven 70 hours.

#4

W. ORANGE, N.J.
Ent'd P.M.
JUL 20 1911

1st Coat Flamed Blanks
6 Blanks coated by
F. Ott let stand in
open air 4 hrs. then
Heated over flame
will number #4
finished coated & placed in oven
at P.M.
21st a 8.15 a.m. Temp - 148°
at 1 P.M " 160°
Matrix temp 140°
Pressed one Record. Looks Perfect #4

Pressed another. Blank temp 165 — #4A
Matrix 140° Good Record

---

3. P.M Pressed another Blank 165
Matrix 140. Good Record #4B

Pressed another. Blank 165°
Matrix 140° Good Record #4.C

Pressed other Blank 165°
Matrix 140° Good Record #4.D

Pressed last Blank 165°
Matrix 140° #4E

Page A X

W. ORANGE, N.J.
Ent'd P.M.
JUL 21 1911

Continued — 6 - Pyridine Coated —

Pressed one Record, temp of Blank 150° —— temp of Matrix 150°
Blank was Kepted heated for 45 hours at temps ranging from 120° to 150°.

Result – Record has full sharp impression
But the Surface is Matt.
will number #3 A
The pyridine 1st Coat does not fix it to the Morstone.

Pressed another - Blank temp 156°
Matrix temp 130°

Result. Sharp impression at on End, the tittle End Record not quite sharp
will number #3 B

Pressed the last blank temp 160°
Matrix 140°. will No # 3 C

W. ORANGE, N.J.
Ent'd P.M.
JUL 21 1911

#5

4 Carbon Tetrachlor
First Coat – Put in oven
at P.M. 20th temp 130°

Pressed first Record at 1. P.M
temp 165° Matrix temp 140° #5

Pressed another Blank temp 170°
Matrix temp 140° —— #5A
Blank was hotter at the large End
The Title End Record impression is not quite sharpe

Pressed another Blank temp 152° #5B
Matrix 130°
Blank was hotter at large End –
was altogather too Cold, it cracked in Expanding

at 2.30 Blank temp 170°
Matrix " 130° #5C
Pressed Record - Tittle End
of the Record is not pressed sharp
due to Matrix being too Cold

#6

W. ORANGE, N.J. A.M.
Ent'd P.M.
JUL 22 1911

13 Blanks coated in
Regular Way. last Coat
Just finished –
Placed in oven temp. 140°
at 12. M. Temp. 152°
at 2. P.M temp 160°
Pressed 1st Record will No #6
at 2.30 temp 162°
Pressed another – #6A
at 3.00 temp 160°
Pressed another #6B
at 4.00 temp 162
Pressed another #6C
at 4.30 Temp – 165° #6D
at 5.00 temp 160 #6E

W. ORANGE, N.J. A.M.
Ent'd P.M.
JUL 24 1911

at 8.00 A.M. Temp. 120° Closed
Doors of oven to Raise temp. 165°
Note the Blank at 120° ~~Hot~~ is
Hard enough to be self sustaining.
and at that temp. a record would not
Destroy itself.
at 11.00 A.M. Moulded 9 Records
with the above Blank which Remained
Hot 24 hours at 120° to 125° and
24 hours at 150° to 165°. All of the
Blanks pressed good with the
Matrices at 140° to 150° ~~Hot~~
Have noticed that when a blank
has been heated only 24 hours
it may be moulded ~~at~~ a lower
temp. than when the Blank has
been heated 48 hours –
the 9 Records mentioned in this
Item will be numbered #6 H

Have noticed that the chilling
of the record must not be
applied too early after the
pressure has been turn on fully
because the film of lac will
not adhear to the montane
Core in spots. after the
pressure has been turned on
it must remain at least ½ minute
before the cooling Jackets are
applied

Mr Edison gave me instruction
to Stop mucking for the time being
and fit up the Record pressing Plant
in #24 Building for a Capacity of
1000 Records per day

W. ORANGE, N.J.
Ent'd P.M.
JUL 29 1911

These Blanks were coated last night

11 Blanks made from new mould — they measure across the centre after Varnished 2.147" — Remark. — it was intended that they should be larger than that.

Put in oven at 9 a.m.
at 9.45 temp was 150°
Started to press the Records at 1 P.M. Temp. of Blanks 160°
Temp. of matrix 150°
will number #7

One Blank coated this morning — colored purple will number #7A

One Blank coated this morning colored with Oil Black D.247 will No #7B

Showed Al. Pierman a sketch and explained a new method of applying Varnish to Montane Blanks by means of spraying with atomizer.

W. ORANGE, N.J.
A.N. PETIT
Ent'd P.M.
AUG 1 1911

Remark —
Aside from the lac Varnish not sticking to the montane base for Cylinder — the lac Varnish when dried forms a very brittle film — when the finished record is droped upon a hard sharp mass the lac film will peel off

If the film was tougher it would not crack open to peel off so the record would thereby be improved —

The film should be made more tenacious without distroying its hardness — it must not be plastic nor sticky —

To remedy will undertake to incorporate Gum Elemi with the regular lac Varnish.
tried to dissolve Elemi with the same Alcohol that dissolves the Shellac — Dont obtain a clear sol.

W. ORANGE, N.J. A.N. PETIT
Ent'd P.M.
AUG 2 1911

Manila Elemi 1oz

Melt and bring to boil temp 350° for about 5 minutes then turn into cold water to form small tears; the result is a clear gum. During the boilling a peculiar odor is given off smelling sour like acetic or citric acid

Some of the above treated gum in same alcohol as used for shellac form a turbid mass of white lump & flakes that floats to about 7/8 the whole. Evaporating some of the clear solution form a film that is not at all clear — and gathers in bloches

Mix some of this clear sol. with lac Varnish causes the Varnish to dry uneven — crinkeled

---

W. ORANGE, N.J. A.N. PETIT
Ent'd P.M.
AUG 3 1911

Tried Alcohol-Elemi Solution with the addition of Sul. Ether only a small percentage of Ether will cause all the floating white substance to desolve — but evaporating this solution upon glass a clear film is not obtained

adding some to regular lac Varnish makes the whole Varnish turbid and will not dry out smooth.

Amyl Acetate added to lac Varnish does mix to produce a clear film but does not harden quick enough. probably a very small quantity will toughen the lac Varnish some but may reduce its hardness —

W. ORANGE, N.J. A.N. PETIT
Ent'd P.M.
AUG 4 1911

Made solution of T. N. Lac in Amyl-alcohol - let stand until well dissolved
This seems to dissolve pretty much all the lac -

Ent'd P.M.
AUG 5 1911

Mixed fused Mexican Elemi with Amyl alcohol let stand until well dissolved

Ent'd P.M.
AUG 18 1911

Since the date Aug 5th Have been busy fitting up a Record pressing plant in #24 Building - Have found by practice that one man and pressman can operate 2 presses - one press can be charged with a blank and [illegible] turned on and the die opened and discharged within an average time of 78 seconds [illegible] [illegible] giving a total of 80 seconds. This time is sufficiently slow enough to be kept up throughout the day -

ENT'D P.M.
AUG 21 1911

Coated 12 Blanks with Pyroxaline solution in ab. W. alcohol (Coopers) as follows.

12 Shellac coated Blanks same as used for Records at present. applied a coating of the above solution with brush when Blank was about blood-heat and placed in oven at 90° for 14 hrs. and then carried to pressing plant - put in oven at 140° for 1,15 minutes and pressed with matrices at 140° and 112 to 113 lbs pressure — pressure turned on rises in 3.0 seconds - and 1½ minute pressure then apply Cold for 2 minutes & extract - looks very good

Records will be numbered

#8-23-11

ENT'D P.M.
AUG 22 1911

Coated 24 Blanks (Shellac coated) same as Regulars - With Pyroxaline Solution same as yesterday. put in oven at 90° for 24 hrs. then transferred to pressing Oven Heated to 150° and moulded after 1½ hr. heating - some of the blanks became too Hot and crinkled some of the film coating.

These will be numbered

8-24-11

Result. Surface smoother than Plain lac - But not enough to be remarkable as a very decided improvement. the Record Surface is more Brilliant - glossy - looks better as a finished article

A. N. PETIT W. ORANGE, N.J.
Ent'd P.M.
AUG 25 1911

Mr Elsworth reported to me that the lac Record would not stand the 110° F. test. ~~He~~ mentioned that the Record flattened after having been subjected to that temperature several times of 1 hour intervals - that is one hour at 110° and 1 hour normal ~~temp~~.

Dr. Lesla reported to me that the lac Record was flattened at 110° F. Also that the Record wears well & had played one over 900 times.

Mr Elsworth told me he was to have Mr Dodd make a sample of wax of higher melting point with object to overcome the Heat test difficulty

A. N. PETIT W. ORANGE, N.J.
Ent'd P.M.
AUG 28 1911

Pressed 16 Records with blanks measuring - when cold - 2.163" ~~Dia.~~ at large end. Instead of Regular blanks which measured 2.150" — The larger blanks show to be an improvment to the surface - the resulting Record surface is smoother. In pratice that ~~Diameter~~ blank is too large. most of this lot had to be forced into the matrix to locate them - So ordered 15 new moulds made of master wax cylinders 2.178" Dia. at large end. these will shrink .007" in the process of Electro-plating. Expect to have mould that will measure 2.171"

A. N. PETIT W. ORANGE, N.J.
Ent'd P.
AUG 29 1911

Coated 24 - Hardened Montana Cylinders made in moulds 2.185" with pyroxiline Solution - one coating - see next page for next opperation -

Ent'd P.M.
AUG 30 1911

Pressed Records with Elsworths mixture of Montane to Raise Melting point Blanks were Coated with lac Solution same as have been produced. Dried in oven 130° temp. about 20 hours- then placed in oven 160° to 168° in 50 minutes the Blanks are as soft as would be practical to use. the pressure was 1500 lb for 1½ minute then applied the cooling for 1½ minute — the Result was that the largest percentage of the Records came out of the Matrices with the film of lac loosened from the base — some portion would blister off.

Showed the Result to Mr Dyer He sent for Mr Elsworth. from him the suggestion came to give the Blank a first layer of Balata solution then apply the lac Coatings

Ent'd 3. P.M.
AUG 30 1911

Applied Second Coating of Pyroxaline solution to the 24 Blanks started yesterday. Noticed that the first coating after drying 20 hrs. normal temperature the Surface was rough — Enough so that the hand could feel the small particals therefore gave the blanks a rubbing with cloth before appling the 2nd coat.

2 hrs. later applied another Coat

Coated 12 Blank with mixture
of Pyroxiline Solution 25%
Shellac solution 75%

Ent'd

Coated 12 Blanks with
mixture of Pyroxiline solution 20%
Lac solution — 80%

Ent'd
SEP 11 1911

A. N. PETIT
Rec'd
SEP 11 1911

After several Experiments in pressing Records have found that the troublesome film brake is due to the blank being to cold - not Plastic enough - to render the film of shellac soft enough to mould or stretch - it brakes open instead of stretching to fill the mould - if the mould is too cold when the Blank is sufficiently Hot enough - the same trouble happens - as soon as the film touches the cold mould the film of lac chills and brakes open.

I have over come the film brake by heating the moulds to 160° to 170° and the blank in oven temp 170° to 180° - With this method another trouble appears that is air spots - I find that the air spots are caused by the film of lac sticking to the Hot matrix so much that it does not allow the air to escape - the High spots of the blank naturally touching the matrix before the low spots the air in the low spots are consequently imprisoned -

To over come this defect a Higher melting Varnish must be found or a Varnish of such nature that it will not stick to the Hot mould enough to prevent the air from passing out -

A.N. PETIT W. ORANGE N.J.
Ent'd SEP 12 1911

Moulded a tray of Records made by giving the Regular Blanks a finish coat of # 9/8/11 Varnish & # 9/11/11 The blank Surface looks Very good – no bubbles and no streaks

Inspection of the above lot of Records showed a much higher percentage of O.K. Records than when Shellac only is used for the film coating. But the smoothness is not all that is desired and they do not stand the High temp. test according to Tesler —

A.N. PETIT W. ORANGE N.J.
Ent'd SEP 15 1911

Gave Dally some Rosolic acid with my experience in using it with shellac: told him that it was soluble in alcohol and should mix with the lac to Raise the melting point and also to render the shellac more permanent and harder —

A.N. PETIT W. ORANGE N.J.
Ent'd SEP 16 1911

Received 4 of the new Rubber Expanders – the Change made was simply thickening of the wall at lower end and a projecting lip also at the lower end for the purpose of better holding the Expander in proper position – The thickening of the wall is intended to allow expansion or inflation at the middle much sooner to compel the air to be squeezed out from between the blank Record & the Matrix

A.N. PETIT W. ORANGE N.J.
Ent'd SEP 18 1911

Made Varnish of Pyroxiline & Rosolic acid. mixes Very good – produces a clear film of good quality which does not melt at 325° F. But becomes sufficiently plastic to mould, the more Rosolic added the more Brittle the film becomes

A.N. PETIT W. ORANGE N.J.
Ent'd SEP 18 1911

Pressed 1 tray of Blanks prepared in the usual way having 5 Coats of Shellac Varnish and after the last coat was applied and dried for Half, I applied annother Coat of Varnish #9/18/11 The Records pressed out fine without air Spots nor film brakes. this is the Second time I have tested the moulding quality of blank having a top layer or Coat of Pyroxiline Solution and it absolutty prevents air spots — Due to the fact that the pyroxiline does not stick to the Hot matrix.

A.N. PETIT W. ORANGE N.J.
Ent'd SEP 25 1911

Ordered Some Blank from Fred Ott Coated as follows — Spray Varnish upon Montane cylinders one coat and put in drying Room for one day & Spray annother coat and put into drying Room again for one day and repeat again the next day. The object is to allow Each Coat to thoroughly dry before the application of annother.

Found That Varnished blank having dried for 5-6 or 7 day's will mould with less air-spots than when the Blanks have dried only 1 or 2 day's probably due to the fact that the Solvant is more thoroughly evaporated and is less sticky to the mould when pressing —

A. N. PETIT W. ORANGE, N.J.
Ent'd SEP 26 1911

pressed more Blanks into Records which blanks were coated over the Regular lac coatings and a finish coating of Pyroxiline solution the Result was again that no air spots shows on the Records. No doubt due to the fact that the pyroxiline does not stick to the Hot matrix

Ordered some more blanks with a finish coat of pyroxiline

A. N. PETIT W. ORANGE, N.J.
Ent'd SEP 27 1911

Pressed Records
Blanks made of 5 coats
hand brush #1 Varnish
Montane Coras from Moulds
2.177 — Dryed 6-7 & 12
days. Matrix temp. 160° to
170° — Softening oven 165° to 172°
Pressure 1300 lbs Raised from
10 to 15 Seconds — 3½ minutes
Hot pressure & 1 m. Cooling
15 seconds for charging &
15 " for Discharging making
total of 5 minutes per Records
percentage of O.K. Eye Inspec.
" " " " Phono-test

A. N. PETIT W. ORANGE, N.J.
Ent'd
SEP 28 1911

Experiment of Sand-papering the Varnished Blanks after Varnish is thoroughly dryed

Blanks from Moulds 2.170
#1 Varnished 5 Coats — in drying Room — Sandpapered on this date with #1 flint paper —

One sheet of sand paper will do for 10 Blanks
And 10 blank may be polished in 5 minutes

On Sept 29th a.m. applied one Coat #1 Varnish with hand Brush & put in drying Room.

W. ORANGE N.J.
Ent'd
OCT 31 1911

AP1 Prime Coat Blank

Benzole 6 Parts }
Rosin 2 " } 1 Part

Aceton 6 Parts }
Copal 1 Part } 1 Part

Reg. amb. wax

Regular amb. wax # A.P. 2

Benzol-Rosin, same as above 1/3 Part
Aceton-Copal " " 2/3 "

A.P. 3

Aceton-Copal add about 1/8 Benzole

Ent'd
NOV 24 1911

	Parts
Shellac	40
Rosin	10
6½¢ Copal	20
Manila Elemi	5
Accroid	10

Melt + boil for 10 minutes
4 Pans of
Chill Sunbeam Mixture # 11-24-11/1

try to dissolve #11-24-11/1 in ab. W. alc.
Does not make clear Solution

Denatured alcohol	2 Parts
Benzol	2 "
Aceton	1 "

To dissolve # 11-24-11/1

Ent'd
NOV 27 1911

Raw Montan wax	3 parts
Elaterite	1 "

Good soft cutting wax.

Ent'd
NOV 28 1911

	Parts
Montan (Raw)	700
Rosin	200

Melt + Raise temp to 500° + filter
#V2

Ent'd
NOV 29 1911

Montan (Raw)	1000
Rosin (Dark	500
Gilsonite	250
Infusorial Earth	200

#V3

Ent'd
DEC 1 1911

Montan (Raw)	700
Rosin (Dark)	200
[illegible] Gilsonite	100
Infusorial Earth	75

#V4

Ent'd
DEC 2 1911

Rosin (Dark	300
Gilsonite	100
Montan (crude)	1000
Inf. Earth	150
more	50

#V5

Ent'd
DEC 2 1911

Take #V3	1000
add Montan	1000
Inf. Earth	50

#V6

Take #V6	1000
Montan	1000
Inf. Earth	100

#V7

Ent'd
DEC 4 1911

Dark Rosin	300

Ent'd
DEC 5 1911

#V7 — 1000 Parts
Inf. Earth
Will #V8

Ent'd
DEC 6 1911

Raw Montan
Boiled & Filtered
Temp. about 350° F.
#V9

Raw Montan	10 Parts
Dark Cork Dust	3 "

Mixes with some parts light enough to float and some Heavy enough to sink Result is a mass with no more flexibility than plain Montan

W. ORANGE, N.J. A.N. PETIT
Ent'd
DEC 6 1911

Montan (Crude)	500
Accroids	100
Rosin	50

Only 25 parts of accroid is consumed

#V10

Montan	500
Accroids	100
Rosin	50
Inf-Earth	100

#V12

Montan	100
Gum Elemi	10

Hardens the montan a very considerable

try more Elemi

Montan	100
Elemi	20

W. ORANGE, N.J. A.N. PETIT
Ent'd
DEC 8 1911

4 mi Wax	100
D. Rosin (Boiled)	30
Flock	8
Chalk	20
Earth (Infusorial)	6

#M.2

W. ORANGE, N.J. A.N. PETIT
Ent'd
DEC 11 1911

4 mi Wax	1000
D. Rosin	300
Flock	70
Chalk	200
Infusorial Earth	60

M-3

W. ORANGE, N.J. A.N. PETIT
Ent'd P.M.
DEC 12 1911

Raw Montan	500
Dark Rosin	300

Raise temp to 500° for 15 minutes – add

4 mi Wax	500
Flock	70
Chalk	200
Infuso. Earth	60

#M4

Ent'd P.M.
DEC 13 1911

Raw Montan	400
Rosin (Dark)	400
4 mi Wax	400
Flock	70
Chalk	200
Infuso-Earth	60

# M.5

Ent'd P.M.
DEC 14 1911

Raw Montan	400
Rosin	300
4 mi Wax	400
Flock	70
Chalk	250
Infuso-Earth	50

# M.6

Dodd's Montan	300
Flock	24
Chalk	50

# M.7

Ent'd P.M.
DEC 15 1911

Dodd's Montan	1000
Flock	75
Infusorial Earth	120

# M 8

Dodds Montan	600
Flock	20
Magnesium Carbonate	40

# M.9 N.G. Carbonate Don't mix good the mass is Mealy

Dodds Montan	2000
Flock (new)	60

M 10

Above mix	666
Rotten Stone	100

# M 11

A. N. PETIT W. ORANGE, N.J.
Ent'd P.M.
DEC 16 1911

#M10 —	666
Chalk	100
Earth	30

#M12

#M10 —	666
Talk	200

#M13 N.G. Pin Holes & does not mix well —

Dodd Montan	500
Flock (new).	15
P. Paris	250

#M14

Dodds Montan	500
Flock (new)	17½
P. Paris	160
Infuso-Earth	40

#M15

A. N. PETIT W. ORANGE, N.J.
Ent'd P.M.
DEC 18 1911

Rosin	1 Part
Gilsonite	1 "

Melt to 450° & Pour off

Rosin-Gilsonit

A. N. PETIT W. ORANGE, N.J.
Ent'd P.M.
DEC 18 1911

Dodd's Montan	500
Rosin-Gilsonit	50
Flock (new)	18
P. Paris	160
Infuso-Earth	40

#M16

Dodd Montan	500
Rosin-Gilsonite	50
Flock	16
P. Paris	200
Inf. Earth	24

#M17

Acetic Acid Desolves #365 Compound
Shell - Tetra-chlor - Nap & [illegible]

A.N. PETTIT W. ORANGE, N.J.
Ent'd P.M.
DEC 20 1911

Dodd's Montan	700
Rosin	200
Flock	25
Chalk	175

#M18

A.N. PETTIT W. ORANGE, N.J.
Ent'd P.M.
DEC 21 1911

Dodds Montan	500
Rosin	

A. N. PETIT, W. ORANGE, N.J.
Ent'd P.M.
JUN 6 1912

A. N. PETIT, W. ORANGE, N.J.
Ent'd P.M.
JUN 6 1912

6-5-12

My observation concerning Shellac.

Of all the samples tried hava found a similarity of product.

One Sample may be more easily desolved than annother and may melt at lower temperature

— My reason for this difference is that the more easily soluble sample is younger then the less soluble — the same applies to its melting point. as the lac ages it looses its Volatile matter, which in fact is the component part of the lac that attacks the Resin & gum when heated or when alcohol or similar liquids is added
I should call it the latent spirit of the lac.

— Annother Reason. Shellac is not always stored under the same atmospheric conditions — a Dry atmosphere will draw the Volatile matter of the shellac sooner then in Damp or moist.
I hava taken from the same package shellac (Quality. Orange) from one

side of the bag which would disolve or melt under the same treatment as a portion taken from the opposit side of the bag. the portion that would not sheet or desolve was caked as though that side of the bag had been exposed to the Sun or heat and soften it enough to become plastic enough to run togather -

Annother Reason - References given concerning the gathering of lac and the subsequent treatment is not uniformely manipulated - Judging from the method employed it seems impossible that all the shellac produced, even by the same manipulator, should have the same melting point or solubility. Mr Rogers of Rogers Pyatt Shellac Co. important shellac importers - told me that the method, as he saw it preformed in India, to form the thin shells with the lac is carried on by placing the lac gum in large bag made of cotton cloth, The bag is held in front of fire place, the heat melts the gum enough to flow through the cotton into a heated container to Keep it liquid or molten - the opperator takes a ladle full of the molten lac and pours it over a revolving cylinder. while annother opperator spreads the gum over the surface of the cylinder with a suitable spreader. Now then: when the lac is softing over the fire place, the outermost portion necessarily receives more heat then the innermost - consequently the outer portion has been deprived of more Valatile matter and is less soluble and higher melting point. then again the lac which is in the heated container the portion which adheres to the sides and bottom nearest to heat will exhaust its Valatile matter sooner then the other portion, so we have again a

Lac from the Central Provinces of India certain kinds good for 10 years while others 2 years only
Ref. Sterns Encyclopedia P.P. 1668

mixed shellac not of uniform melting point or solubility though the samples may analyze the same

All shellacs may become insoluble and infusable by depriving it of its Volatile constituents either by slow or rapid process -

Shellac will become plastic in contact with heated substances, it becomes molten in contact with any fusible organic salts or compounds and fixed oils. it becomes more or less liquid in Alcohol and most all light oily liquids such as fusel oil - amyl acetate Birch oil - in the cold & more liquid with heat.

Shellac is miscible with any hard dry powdered material - the latter simply acts as a filler to stiffen and produce a harder & tougher mass - Zinc Oxide for instance will stiffen the lac when only a small quantity is used and Infusorial Earth will enter into much larger quantity - with Zinc the pasty mass sets very Hard quickly - with the Earth, sets slowly and softer. probably due to the greasy nature of the Earth. —— the Zinc probably combines with certain ingredients of the lac - it seems true because the shellac color turns to Pink - If a Nickel Salt is used the Color of the lac turns green - which shows evidence of some combination - Such mixtures are usually made between steam heated Rolls which melts the lac and intimately mix in the Dry Powders.

Mixtures of Shellac with organic Salts of whatever nature the resulting mass shows evidence of the salt by its fracture - stability - sensitiveness to heat & moisture - toughness & smoothness.

I melt napthalene - add shellac at 200° F. napthalene begins to sublime shellac melts therein - if not stirred the shellac stays to the bottom and will there coagulate - let the temperature rise slowly to 280° the lac is disturbed by the boiling of the napthalene which becomes darker - the lac seems to disorganize to form flocks which rises in the napthalene the flocks gradually brak up into smaller particles so that the mixture looks to be a pretty compact mass, this goes on without stiring of course and having napthalene in excess simply to prove out the solvent power of the napthalene Dip a piece of glass into it which takes a sample - it crystalizes both fiberous & scaly - color brown - at 300° Close examination shows the lac to be simply floating in fine divided State - allow the mixture - to cool down slowly - the lac drops Some of the napthalene comes to the surface but carries with something of the Shellac, because when cool the crystals are yellowish and not so brittle - the shellac when cold show it has taken some of the napthalene which does not seperate by slow cooling - , on re-heating more napthalene comes to the surface - but the slighest motion of the mixture combines the two so that it is difficult to pour off the flooting napthalene.

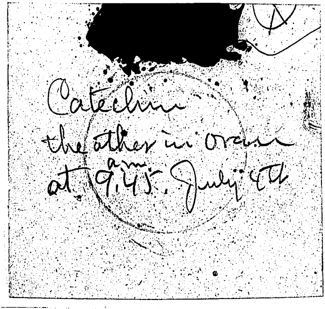
Melt common pine Rosin at 220° the Shellac is added Melts slowly - floats and is full of Bubbles - at 280° Some of the Bubbles break off and some of the shellac drops after 1 hr. heating at 280° - 300° a portion of the Shellac which floats becomes less fusible - seperates from the rest as a gluey-like mass. Skim it off and no more seems to come up. the mixture is now not clear it looks like as if Rosin and a very fine Powder floating was

the result - a Sample upon glass
show after cooling that the mixture
is not so Brittle + sticky as Rosin and not
so hard & tough as Shellac
the Sample seems to form when
cold a compact clear mass -
tried Bay wax in the mixture to
give it good Shaving quality
the wax immediately coagulated
the mass to a gelatine-like
which would not become liquid
after 1/2 hr. heating - add more Rosin
makes little more liquid but
coagulated lumps remains -

[ITEM FOUND IN BOOK]

Camphor

[ITEM FOUND IN BOOK]



Catechism
the other in Oran
at 9.45 a.m. July 4th

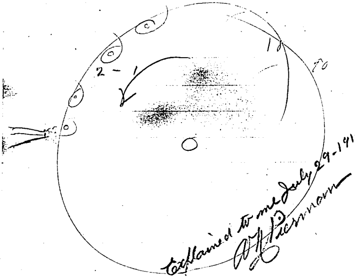
[ITEM FOUND IN BOOK]

W. ORANGE, N. J. A. N. PETRY

Ent'd P.M.

JUL 24 1911

Shown to Mr. Lewis on this date



Explained to me July 29-1911
A J Piermann

Air Brush
— Method of appling Varnish Coating to Record Blanks

[ITEM FOUND IN BOOK]

Sulphate Barium – (Levigated)
Strontium Carbonate – & Sulphate
~~Asbestos powder~~
Aluminium Hydrate
Iron Oxide
Lead Sesquioxide

[ITEM FOUND IN BOOK]

✓ Benzonaphtol

Quinidine

Triacetyl-hydroquinone

✓ Acetanilide

✓ Benzophenol

[ITEM FOUND IN BOOK]

✓ Nitrotoluol (Para)

✓ Paraformaldeheyde -

Nitroanisol para

✓ Betanaphtol
✓ Alphanaphtol
✓ Phenanthren

✓ Nitrophenol

✓ Camphor,

✓ Monobromocamphor

✗ Resorcin

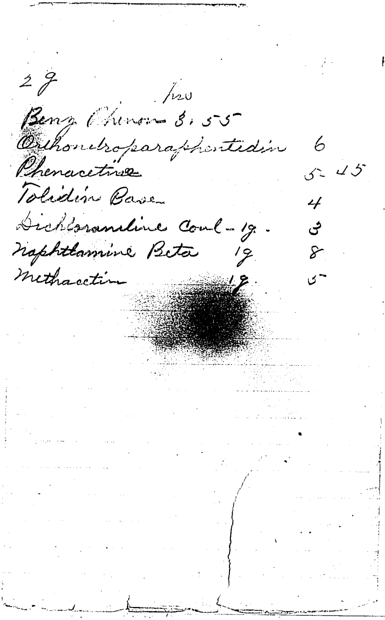
[ITEM FOUND IN BOOK]

Mix. shellac 5g tetra.

28

Orthotoluol Sulphamide	2 hrs
Paraphenylendiamine	8 "
Benzidin	2 " 44
Nitranline para pure	5 "
Metatoluylendiamine	11 "
Tolidin Para	5 " 45
Dichloraniline coml	2, 52
Naphtlamine Bet[illegible]	6, 30
Acet Para Phenyl[illegible]in	2. 35
Naphtylamin alpha	1.2,
Orthotoluolsulphamide	2-45
Hydroquinone Biacetyl	6 -
Dinitronaphtalen Pure	2 -
Ortho Amidophenol	4.30
Diphenylamine cp	7. 35
Nopthol alpha Recryst med	3, 48
Paranisidin	3,
Parachloroaniline	6.40
Cinchonidine Benzoate	3.54

[ITEM FOUND IN BOOK]



2 g

/no

Beng. Chinon 8 , 5 5		
Orthonitroparaphentidin		6
Phenacetine		5 - 45
Tolidin Base		4
Dichloraniline Coul -	1g.	3
Naphtlamine Beta	1g	8
Methacetin	1g.	5

[ITEM FOUND IN BOOK]

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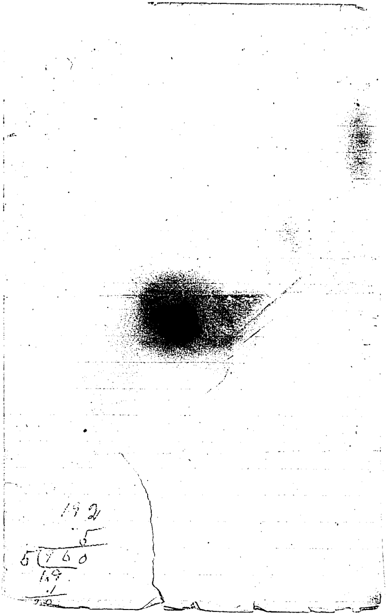

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5) 760

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[illegible]